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GENDERED PATTERNS IN ACADEMIC AUTHORSHIP: EXAMPLES FROM THE MANAGEMENT INFORMATION SYSTEMS DISCIPLINE

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Abstract

What is the secret to a successful career in academia? Is that secret different for a woman than it is for a man? This study focuses on whether male and female academics have distinctive patterns of representation as authors in top management information systems journals. Archival data, consisting of author information, article information, and editorial board gender composition, was collected for two journals, MIS Quarterly *and* Journal of Management Information Systems*. Consistent with previous research findings, preliminary results suggest that females represent a disproportionately small minority of authors in both of these two top MIS journals.*

Keywords: Gender, publication, MIS journals, academic careers

Introduction

What is the secret to a successful career in academia? Is that secret different for a woman than it is for a man? Books, such as *Lifting a Ton of Feathers: A Woman's Guide to Surviving in the Academic World* and *Ms. Mentor's Impeccable Advice for Women in Academia,* argue that females face different problems and impediments in their pursuit of success in an academic career. Outside the popular press, scholarly researchers suggest that the image of female academics fighting to succeed in an inhospitable, gender-imbalanced "ivory tower" is not far from reality. Exploring how different career-related phenomena affect the satisfaction, productivity, and advancement of women in academia is important for understanding why women continue to be under-represented on university faculties, especially at the senior level. Given the pervasiveness of the "publish or perish" mantra and the fact that publication productivity is the most highly accepted standard of achievement in academia, it makes sense to question whether participation in academic publishing differs between the sexes. The literature in the business disciplines, in general, and the information systems (IS) discipline, in specific, has not paid adequate attention to the issues surrounding gender diversity in academe. This research is driven to address this gap in the literature.

This study focuses on whether male and female academics have distinctive patterns of participation in academic publishing in top management information systems journals. Archival data, consisting of author information (gender, rank, affiliation, order in author list), article information (page length and empirical orientation), and editorial board gender composition, was coded for two top MIS journals. Data was collected beginning with the first year of publishing of each journal and ending in 2001. This work is in progress, and only initial descriptive results are presented in this paper.

Contribution

Publishing in high-level MIS journals is a prerequisite for achieving tenure, promotion, and professional status in most faculty MIS positions. Exploring how patterns of participation in academic publishing differ by gender is an important step in understanding how women faculty members are faring in their journey toward professional parity in the MIS academy. Identification of differences in the overall success of men and women in placing research articles in the top MIS journals, as well as differences in how men and women choose to work together in producing such articles, provides context for women faculty who are making decisions about how to further their academic careers and for others who are charged with the responsibility for supporting and developing more gender diversity on MIS and business faculties.

Literature Review

Some researchers believe that the academy, in general, is not a female-friendly environment. Toren and Kraus (1987) and Tolbert, Simons, Andrews and Rhee (1995) suggest that, in many academic units, female faculty constitute a minority faction that is too small to create a collegial, non-discriminating environment for faculty women. Poor interaction with male colleagues, low levels of support, and outright discriminatory treatment appear to be more characteristic of work environments where women constitute a relatively small minority (between 15% and 35%). Davis and Astin (1990) suggest that women faculty members, especially single women, are more likely to be excluded from the academic "old boys' club" (p. 99) and, therefore, miss out on the collegiality and networking that builds satisfying work experiences and successful careers. As a result more females may opt out of academic career paths.

Bentley and Black (1992), Luzzadder-Beach and MacFarlane (2000), and Winkler (2000) report that for those women who do choose to enter the academy, significant gender imbalances exist in hiring, academic rank, and achievement of tenure. In economics, for example, males are much more likely than females to achieve tenure within seven years of earning their doctorate (Kahn, 1993). Mirsa, Kennelly, and Karides (1999) indicate that, while approximately half of assistant and associate professors in university sociology departments are female, this proportion drops significantly to 17% at the full professor rank. Winkler (2000) and Kahn (1993) add support to these assertions, suggesting that a review of the current literature indicates lower tenure and promotion success rates for female compared to male faculty members. In a 1982 survey of matched, highly-productive male and female faculty members, female members were much more likely to be an assistant or associate professor than were males. This tendency for women faculty to hold lower level appointments than their male colleagues, although lessened somewhat by the existence of a faculty union, prevails in both union and non-union environments (Benedict & Wilder, 1999).

The most recently published results of the U.S. Department of Education's National Study of Postsecondary Faculty (NSOPF) report on data collected from a sample of approximately 560,390 faculty members from more than 10,600 public and private postsecondary institutions in the United States (U. S. Department of Education, 1999). Data presented in Tables 1 and 2 describe full-time faculty across all disciplines as well as full-time faculty in the information systems field (those respondents who identified themselves as involved in delivering for-credit academic programs and identified their primary teaching field as "Computing and Information Sciences"). Table I presents a brief summary of the gender make-up of faculties in information systems contrasted with that across all faculty. This comparison demonstrates that females represent a little less than one-third of all information systems faculty members. This percentage is only slightly below that for women on faculties across all disciplines (36.3%).

Table 1. Gender Make-Up of U.S. Faculties

	Females (Percentage of Total Faculty)	Males (Percentage of Total Faculty)
All Disciplines	36.3%	63.7%
Information Systems	31.4%	6.6%

Source: U.S. Department of Education (1999)

Table 2 presents data comparing IS faculty, in terms of rank, with faculties across all disciplines. These figures highlight that female academics, in general, are disproportionately employed in non-tenure track and lower-level tenure-track positions. The situation for women faculty in IS is particular dramatic, however, with more than 40% of women IS faculty employed as lecturers or instructors, positions that are not part of the university tenure system. These positions tend to represent term appointments, with heavy teaching responsibilities and little influence over academic programs or conditions of employment.

Table 2. Ranks of Male and Female U.S. Faculty Members

	All Academic Disciplines		Information Systems	
Rank	Percentage of Female Faculty	Percentage of Male Faculty	Percentage of Female Faculty	Percentage of Male Faculty
Full Professor	17.6%	38.2%	10.1%	27.6%
Associate Professor	22.2%	24.3%	12.0%	26.8%
Assistant Professor	27.6%	19.3%	31.0%	19.6%
Lecturer/Instructor	22.8%	11.9%	40.4%	18.1%

Source: U.S. Department of Education (1999)

For most faculty who aspire to career advancement and professional status, successful scholarly research and publication are critical accomplishments. While some researchers suggest that gender differences in research productivity are small or insignificant (Robinson 1973; Reskin 1977), an overwhelming body of research demonstrates that female academics tend to have less productive research and publication records than do male academics (Converse & Converse 1971; Cole & Cole 1973; Astin & Bayer 1979; Davis & Astin 1990; Kolpin & Singell 1996). This trend appears to be consistent across countries--the United States (Davis & Astin 1990), Canada (Nakhaie 2002) and Norway (Lie 1990; Kyvik 1990)--and also across disciplines--science (Nakhaie 2002), economics (Davis & Patterson 2001), and political science (Converse & Converse 1971). The U.S. Department of Education (1999) reports that among faculty members in the information systems discipline, males substantially out-publish females in terms of articles in refereed journals. Male faculty members report publishing an average of 2.73 articles in refereed journals during the two years immediately preceding the most recent survey, while women faculty report an average of only .65 articles during the preceding two years. For the IS faculty, then, male faculty out-produced female faculty by a margin of over 4-to-1.

Table 3. Institutional Classification for IS Faculty Members

	Public or Private Research, Doctoral, & Medical	Public or Private Comprehensive	Private Liberal Arts	Public 2-Year
Percentage of Male IS Faculty	40.8%	28.2%	4.4%	19.4%
Percentage of Female IS Faculty	22.7%	15.6%	5.1%	47.6%

Source: U.S. Department of Education (1999)

Current Study

Inherent in any consideration of publication productivity is the recognition of the dual role that academic journals play in the professional lives of researchers, as well as for the health and long-term development of the academic discipline. Academic journals, via publishing choices made by their editors and editorial boards, fulfill two critical gatekeeper roles: 1) they screen, validate and disseminate new knowledge in their respective fields; and 2) they certify competence and provide the means for career advancement and status for those authors they choose to publish. With this in mind, much can be gained by spotlighting patterns that emerge in the articles and authors who are deemed worthy for inclusion in the key journals of a specific discipline. Examining the publication history of such journals can throw light on many timely questions about a specific discipline or the academy as a whole. While publication analysis reviews have appeared sporadically in journals over the years, most of these reviews tend to present a general "state of the journal" perspective (e.g., Sprott & Miyazaki, 2002). To our knowledge, no publication analyses have been reported in the MIS literature that examine gendered patterns in authorship.

The data analyzed for these preliminary results represent articles in *MIS Quarterly* (*MISQ*) and *Journal of Management Information Systems* (*JMIS*) published between 1977 and 1998. These journals were selected because they focus exclusively on MIS research and appear at or near the very top of a number of respected rankings of IS journals (Mylonopoulos & Theoharakis, 2001; Hardgrave & Walstrom, 1997; Holsapple, et al., 1994; Whitman, et al., 1999). A census approach was taken resulting in

all peer-reviewed articles from available issues of these journals being included in the sample. Comments, reviews, and editorial introductions were not coded as articles. It is important to note that the article represents the unit of analysis in this study. An author's academic rank, institutional affiliation, gender, and citation order were recorded for each article for which they appeared as an author. Identity of individual authors was not recorded, therefore, this study cannot address how many unique individuals were involved in the sample of articles.

Preliminary Descriptive Results

One-hundred-and-sixty-five issues of the two journals were examined and coded. Table 4 and 5 present basic information about the journals coded and authors represented. The coded journals contain a total of 954 articles, providing data on 2,035 contributing authors. Of these authors, 1,711 (84%) are male and 324 (16%) are female. There are 254 sole-authored papers in the sample, which account for almost 26% of all articles. Of the sole-authored articles, only 34 (13%) are by a sole female author, while 220 (87%) are authored by a sole male. Roughly 10% of all female authorship activity in the study can be classified as sole authorship, a rate that is somewhat lower than their male counterparts (12.8%).

Joint-authored articles make-up the remainder of the coded articles. A totel of 698 articles were authored by writing teams of varyious size and gender composition. Classifying writing teams according to gender requires that we first define how each gender is represented on the team. We identified four categories of gender participation on a writing team: minimum of one female/male on the team, lead female/male author on a mixed-gender team, minimum of 50% of female/male authors on a team, and gender-sorted (all female/male authors on a team). Table 5 presents the count of articles in each category for both female and male authors, along with the percentage of relevant articles the counts represent, and the average team size for each category. These data show that women are represented on approximately 34% of all writing teams, they are lead author on approximately 47% of all mixed-gender writing teams (not including articles specified as equal contribution works), but represent the equal or majority gender on only 20% of writing teams. Women represent the equal or majority gender on only 5% of all published articles. Gender-sorted teams produced almost 70% of all articles. All- female teams account for only 5% of gender-sorted teams. Examining average team sizes, Table 5 shows that when women authors are active in a role of control or leadership, either represented equally or as the majority of the team, as the lead author, or as the sole gender, they tend to collaborate on somewhat smaller teams than do men. When we examine all writing teams with a minimum of one female author, the number of contributors on the team is larger than comparably defined teams with a minimum of one male author. Contrasting counts, percentages, and average team sizes for male authors are also displayed in the table.

Table 4. Coded Journals

Journal Title	Years Coded	Number of Issues Coded	Number of Articles Coded
MIS Quarterly	1977-1999	100	478
Journal of Management Information Systems	1984-2000	65	474
Total		165	952

Females make up 17% of all authors in *MISQ* and 15% of authors in *JMIS*. Because *JMIS* did not begin publication until 1984 and data from 2000 has not yet been recorded for MISQ (only two issues of MISQ were coded for 1999), data for both journals were constrained to those issues published between the years 1984 and 1999 (the years with data from both journals). During this 16-year period, female authors comprised a surprisingly smaller percentage of all authors publishing in both journals: 16% of authors in *MISQ* and only 14% of authors in *JMIS*. Between 1984 and 1999, the percentage of female author participation in *MISQ* increased markedly, from 11% in 1984 to 23% in 1999. In *JMIS*, females represented a smaller minority of authors in 1999, only 8%, than in 1984. It should be noted, however, that females comprised 25% of all authors in JMIS the preceding year, 1998. Certainly, looking at gender ratios in authorship during narrow time windows can be very misleading.

Table 5. Authorship Patterns by Gender

	Male	Female	Total
Contributing authors	1,711 (**.84**)	324 (**.16**)	2035
Sole-authored articles	220 (**.87**)	34 (**.13**)	254
Joint-authored articles (minimum 1)	674 (**.97**) *(2.65/team)* [+]	234 (**.34**) *(3.07/team)*	698*
Joint-authored articles (lead author, mixed)	104 (**.53**) *(3.15/team)*	93 (**.47**) *(2.52/team)*	197
Joint-authored articles (minimum 50%)	660 (**.95**) *(2.56/team)*	143 (**.20**) *(2.24/team)*	698*
Gender-sorted joint-authored articles	464 (**.95**) *(2.44/team)*	24 (**.05**) *(2.13/team)*	488

Note: percentages of total are bold and shown inside parentheses.
[+]Average number of authors per authoring team (in italics)
Total joint-authored articles

Table 6. Gender Authoring by Journal

Journal/Discipline	Male	Female	Total		Male (1984-1999)	Female (1984-1999)	Total (1984-1999)
MIS Quarterly	810 (*.83*)	169 (*.17*)	979		650 (*.82*)	144 (*.18*)	794
Journal of MIS	901 (*.85*)	155 (*.15*)	1056		840 (*.86*)	143 (*.14*)	983
Total	1711 (*.84*)	324 (*.16*)	2035		1490 (*.84*)	287 (*.16*)	1777

Note: percentages of total are shown in italics and inside parentheses

Table 7. Authorship Changes Over Time by Journal

Journal/Year		Male	Female	Total
MIS Quarterly	1984	34 (*.89*)	4 (*.11*)	38
	1999	30 (*.77*)	9 (*.23*)	39
Journal of MIS	1984	23 (*1.0*)	0 (*.0*)	23
	1999	65 (*.92*)	5 (*.08*)	70
Total	1984	57 (*.93*)	4 (*.07*)	61
	1999	95 (*.87*)	14 (*.09*)	109

Note: percentages of total are showing in italics and inside parentheses

Conclusions

Consistent with previous research findings, the preliminary results of this study suggest that females represent a disproportionately small minority of authors in both of these two top MIS journals. Over the full publication history of these two top MIS journals, women represent only 16% of contributing authors, while, as of 1999, women comprise over 31% of the IS faculty in U.S. institutions of higher education. Again across both journals, women authored only 13% of published sole-authored papers and only 10.5% gender-sorted, co-authored papers. Of the 698 co-authored papers published, women were represented as authors, in at least a minority role, in almost 34% of the papers. This participation rate drops dramatically, however, when we apply a more selective definition of female participation on a writing team. Applying a requirement that females represent a minimum of 50% of collaborators on a team, the female participation rate falls to 20% of all co-authored articles. Further, female participation rate falls to 17% of co-authored papers considering only teams with a female lead author and to only 3% considering only gender-sorted, all-female co-authored articles. Adjusting the time period to the years when both journals were published

and data collected, 1984-1999, *MIS Quarterly* has a slightly higher female participation rate compared to the *Journal of Management Information Systems* (18% vs. 14%). Female participation has grown in both journals over time, however, neither journal has achieved an overall female participation rate that approaches female representation in the population of IS faculties. Analyses presented in this paper, it must be remembered, are very preliminary. Further work will examine more closely the representation of female authors in these top IS journals with the goal of being able to draw more meaningful conclusions about how female members of the IS academy have access to these gateways to knowledge creation and career advancement.

Gender bias is a topic whose relevance has not faded with time. Encouraging diversity in the professorate is an important step not only toward enriching MIS as a dynamic, multi-disciplinary academic discipline, but also toward empowering the students for whom MIS professors act as mentors and role models. Understanding more about how the processes and outcomes associated with academic careers differ for men and women can help us overcome barriers to attracting and retaining qualified, talented, gender-diverse faculties in the coming years.

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